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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,508	04/16/2004	Mutsuyuki Kawaguchi	10873.1439US01	1951
7590 07/08/2005			EXAMINER	
Hamre, Schumann, Mueller & Larson, P.C. P.O. Box 2902-0902 Minneapolis, MN 55402			LAVILLA, MICHAEL E	
			ART UNIT	PAPER NUMBER
			1775	

DATE MAILED: 07/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/826,508

Applicant(s)

KAWAGUCHI ET AL.

Examiner

Michael La Villa

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-11 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 16 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
  1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara et al. USP 6,329,074. Fujiwara teaches forming a diffusion coating on a copper foil in order to form a quaternary Cu, Ni, Zn, and Sn alloy layer on the outer surface of the copper foil. See Fujiwara (col. 4, line 30 through col. 5, line 30; col. 8, line 27-41; Table 1). The alloy layer improves adhesion to further coating layers, including resin layers. Fujiwara teaches a wide range of alloy compositions of relative amounts of Cu, Ni, Zn, and Sn, some of which would be expected to be encompassed by the claimed ranges. In view of the areal densities of the elements of the layers of Fujiwara, the thicknesses of these

layers would be expected to be close to the smaller thicknesses in the claimed range, i.e., ca. 0.001 to 0.01 microns. It would have been obvious to one of ordinary skill in the art at the time of the invention to fabricate the alloy layers of Fujiwara within the range of compositions and having the layer properties disclosed by Fujiwara as being effective. It would have been obvious to one of ordinary skill in the art at the time of the invention to optimize adhesion of these layers to subsequently applied coating layers, according to the teachings of Fujiwara, which would have the expected outcome of providing alloy compositions and thicknesses comparable to those claimed since the claimed alloys are similarly optimized. Some of those alloy layers dominated with tin, disclosed by Fujiwara as being effective, would therefore be expected to fall within the claimed range of laminates. Since the description of a copper surface as being rough or smooth is merely relative and not linked to any particular standard, these qualities are deemed inherently satisfied by any surface. Contrary to applicant's explanations, Fujiwara does teach laminating to resin layers at the cited portions above. Moreover, the claims do not preclude additional layers or, specifically, application of chromate layers. The claims recite the resin layer as an intended use, not a necessary structural element.

4. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugawara et al. USP 6,180,174. Sugawara teaches forming a tin diffusion layer on a copper alloy, having substantial Zn content, to thereby form a ternary alloy layer. Sugawara suggests but does not exemplify thicknesses as thin as 0.5

microns. See Sugawara (col. 2, lines 26-48; col. 3, lines 7-9 and 42-53; col. 4, lines 6-34; and Table 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to fabricate the laminate of Sugawara to form layers having the claimed thicknesses as Sugawara suggests that layers of the claimed thicknesses are effective. Sugawara also teaches a range of compositions of Zn. It would have been obvious to one of ordinary skill in the art at the time of the invention to fabricate copper alloys having the disclosed range of Zn contents as Sugawara also teaches that effective copper alloys may possess any Zn content in the disclosed range. In view of the disclosed permissible Zn content in the copper material and the application of a pure tin layer for diffusion, it would be expected that the resulting alloy layers would have the claimed relative amounts of Cu, Sn, and Zn and the claimed thicknesses. Since the description of a copper surface as being rough or smooth is merely relative and not linked to any particular standard, these qualities are deemed inherently satisfied by any surface. The claims do not preclude additional layers. The claims recite the resin layer as an intended use, not a necessary structural element.


#### ***Response to Amendment***

I. In view of applicant's amendments and arguments, applicant traverses the section 112, second paragraph rejection of the Office Action mailed on 23 February 2005. Rejection is withdrawn.

**Conclusion**

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael La Villa whose telephone number is (571) 272-1539. The examiner can normally be reached on Monday through Friday.
6. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.
7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael La Villa  
28 June 2005

  
MICHAEL E. LAVILLA PH.D.  
PRIMARY EXAMINER